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SEI Monographs on the Use of Commercial Software in Government Systems

A Summary of DoD COTS-Related Policies

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About this Series

Government policies on the acquisition of software-intensive systems have recently undergone a significant shift in emphasis toward use of existing commercial products. Some Requests for Proposals (RFPs) now include a mandate concerning the amount of COTS (commercial off-the-shelf) products that must be included. This interest in COTS products is premised on a number of factors, not least of which is the spiraling cost of software. Given the current state of shrinking budgets and growing need, it is obvious to almost any observer that appropriate use of commercially available products is one of the remedies that might enable the government to acquire needed capabilities in a cost-effective manner. In systems where the use of existing commercial components is both possible and feasible, it is no longer acceptable for the government to specify, build, and maintain a large array of comparable proprietary products.

However, like any solution to any problem, there are drawbacks as well as benefits: significant tradeoffs exist when embracing a commercial basis for the government's software systems. Thus, the policies that favor COTS usage must be implemented with an understanding of the complex set of impacts that stem from use of commercial products. Those implementing COTS products must also recognize the associated issues—system distribution, interface standards, legacy system reengineering, and so forth—with which a COTS-based approach must be integrated and balanced.

In response to this need, a set of monographs is being prepared that addresses the use of COTS software in government systems. Each monograph will focus on a particular topic, for example: the types of systems that will most benefit from a COTS approach; guidelines about the hard tradeoffs made when incorporating COTS products into systems; recommended processes and procedures for integrating multiple commercial products; upgrade strategies for multiple vendors' systems; recommendations about when not to use a commercial approach. Since these issues have an impact on a broad community in DoD and other government agencies, and range from high-level policy questions to detailed technical questions, we have chosen this modular approach; an individual monograph can be brief and focused, yet still provide sufficient detail to be valuable.

About this Monograph

This Monograph examines seven documents that contain official guidance regarding the use of COTS products in Government systems. The particular focus of each document is described, and the overall scope and applicability of the documents are considered, both individually and jointly. The expected audience for this Monograph includes persons involved in acquisition and program management, for whom these policy statement are of binding significance.

The information contained in this Monograph is by its nature subject to the revision of the documents and to the appearance of new policy statements. We expect that a revision of content, and possibly an expansion of its scope will be necessary. We therefore intend to revise and update the Monograph in the late Spring of 1999, and as needed thereafter.

A Summary of DoD
COTS-Related Policies

1   Introduction: The need for clarification

One of the most far-reaching changes in DoD and Government policy has been that, in acquiring and developing computer-based systems, especially those in the domain of information systems, recent policy statements now strongly favor the use of commercial, off-the-shelf (COTS) products. While there are numerous reasons for this policy shift, a critical factor is the growing cost of building and maintaining Government-unique systems at the same time that very similar systems are available in the commercial marketplace at a relatively far lower expense.

To further these policies toward COTS products, a number of guidance documents, whether in the form of memorandums, letters, or regulations, have been issued. Some of these documents are foundational, and apply to all Government systems. Others are particular to the DoD, and still others are focussed either on a specific category of system or type of acquisition. As the number of these guidance documents has grown, a perception has arisen for many DoD personnel that there are overlapping policies in force, that the overall collection of regulations is somehow bewildering, or that understanding the key rules and regulations may be complex or difficult.

The purpose of this Monograph is therefore to summarize and to clarify, as much as is possible in capsule form, the essential character of the most important of these documents. We hope to provide practical answers to the following three questions:

- What are the policy documents that apply to the use of COTS products in DoD systems?
- What do they mandate or recommend for developing a COTS-based system?
- What conflicts exist among the mandates and suggestions they contain?

We caution that this paper is not intended to provide the reader with an exhaustive examination of these documents. It gives an overview and perspective; we also hope that it provides some useful clarification and insight as well. But it should not replace a hands-on examination of the actual sources by the reader: anyone who is professionally affected by these policy documents must still get them, read and digest them, and understand how they apply to a given system or acquisition.

The Monograph is organized as follows. Section 2 is an overview of the chronology and scope of the documents, and the relationships between and among them. Section 3 examines the pertinent information about COTS found in each document. Section 4 summarizes the common themes found throughout many of them. Section 5 is a conclusion that reiterates the key points of the Monograph.

2   General overview of the documents

We have identified seven documents as being both of major policy importance and specifically relevant to the use of COTS products. These documents are:

- Clinger-Cohen Act
- Office of Management & Budget Memorandum of October 25, 1996 ("Raines Rules")
- Federal Acquisition Regulation (FAR)/Defense FAR Supplement (DFARS)
- DoD Directive 5000.1
- DoD Regulation 5000.2
- DoD Joint Technical Architecture (version 1.0)[1]
- Defense Information Infrastructure (DII) Common Operating Environment (COE) (baseline version 3.1)

These have binding force on Government and DoD systems today. Note that this list is not complete: there are other documents that might have been included as well. For instance, four documents exist that were highly important policy statements only a few years ago. These four (the "Perry memo," the "Kaminski memo," the Federal Acquisition Reform Act (FARA), and the Federal Acquisition Streamlining Act (FASA)) have been either overtaken or superseded by the eight key documents listed above, and except for their chronology, we will not provide detailed discussion of them in this Monograph. In addition, there are documents expected to appear (e.g., DoD Directive 8000.1, revisions to DoDD 3405.1) that will likely have significant impact on COTS policies. Table 1 shows a time line since 1994 that indicates when each document was issued.

Note that the Federal Acquisition Regulation (FAR) is <u>not</u> indicated on this timeline. This is because the FAR, together with the DoD Supplement (DFARS), is frequently reissued on an ongoing basis to incorporate other documents and regulations. It cannot be located precisely on a sequential timeline.

Before discussing the documents in themselves, it is first useful to clarify certain aspects of their applicability and scope, particularly with reference to the different official categories of acquisition. We have chosen to present this information in some detail, since even a brief description of the documents depends on some understanding of these categories.

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[1]   Version 2.0 of the JTA has recently been issued; we will incorporate it into the next revision of this Monograph.

Legislation	Federal Acquisition Streamlining Act (12/94)	Federal Acquisition Reform Act (11/95)	Clinger Cohen Act (2/96)	
Federal documents			Raines Rules	
DoD policy documents	Perry Memo (6/94) Kaminski Memo (11/94)		DoDD 5000.1 (3/96) DoD 5000.2-R *(changed three times, most recently in 1/98)*	
DoD specification			Joint Technical Architecture (8/96)	Defense Information Infrastructure/ Common Operating Environment (DII/COE) (4/97)
	1994	**1995**	**1996**	**1997**

Table 1:   Key Documents issued since 1994

2.1   Applicability of the documents

One of the first questions that will arise for a Program Manager dealing with the question of COTS is: "Which of these documents applies to me?" The answer to this question may not be immediately obvious, since a key feature of each of these documents is it has a particular focus of applicability. Further, the areas of applicability do not fall into precisely divided categories and the overlaps between them can be a potential source of confusion. One useful clarifying device will be to start by describing the documents at the widest level, then gradually refining the perspective accordingly.

We therefore provide in Table 2 a very broad initial overview that categorizes these documents by their applicability either to the entire Federal Government or specifically to the DoD. This table also distinguishes these documents according to whether they apply to acquisition in general or to information technology in particular.

	Acquisition	Information Technology
All Federal Government	FAR	Clinger-Cohen Raines Rules
Department of Defense	DFARS DoDD 5000.1 DoD 50002-R	Joint Technical Architecture DII/COE

Table 2: General categories of documents

We can refine this table in two different ways. First, we note that while the two main categories (Acquisition and Information Technology) are conceptually separate, they are not totally independent; they intersect, but neither is a subset of the other, and overlaps exist (e.g., an acquisition of an information technology system). Second, some of these documents are aimed at providing general guidance over a broad area while others are aimed at more focussed and smaller subsets within these categories.

Thus we refine this table by first indicating only the most general of these documents in each of the two main categories. For the Acquisition category, those would be the FAR, the DFARS and DoDD 5000.1. For the Information Technology category, the most generally applicable document is the Clinger-Cohen Act. Figure 1 portrays this relationship; the intersection of these two categories, indicated by the darker section, means that there are programs covered by both categories.
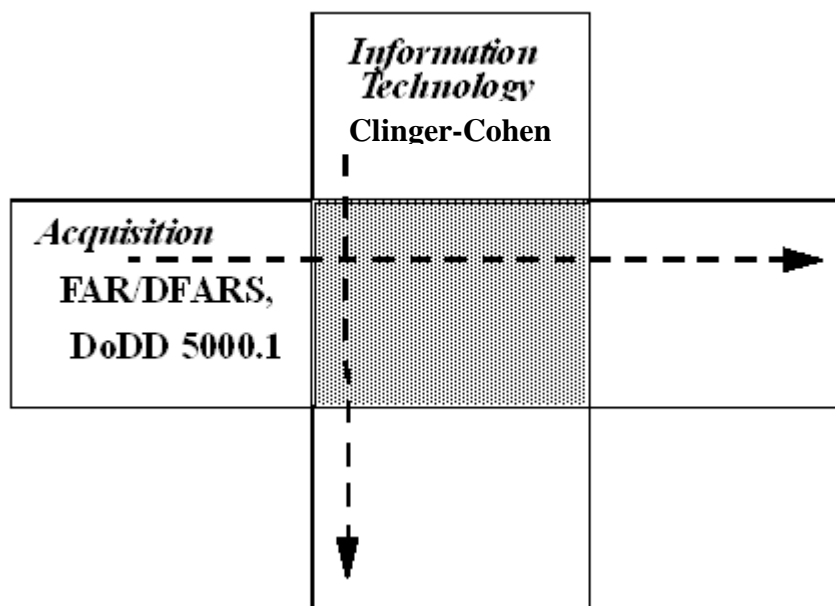
Figure 1

The next refinement shows the more specific focus of the remaining four documents, which are concerned with subsets of these two general categories. For Acquisition, the principal subset is that of *major* acquisitions[2]; this subset is the subject of DoDD 5000.2-R. For Information Technology, there are two overlapping subsets: *major* information systems, and C4I systems. Major information systems are the subject of Raines Rules; C4I systems are the subject of both the JTA and the DII/COE. These subsets are portrayed in Figure 2. It is conceivable, for any given system, that only one of these documents applies to it; for another system, it is equally conceivable that all seven apply to it. Such a program would be one that falls into the darker intersection in Figure 2.
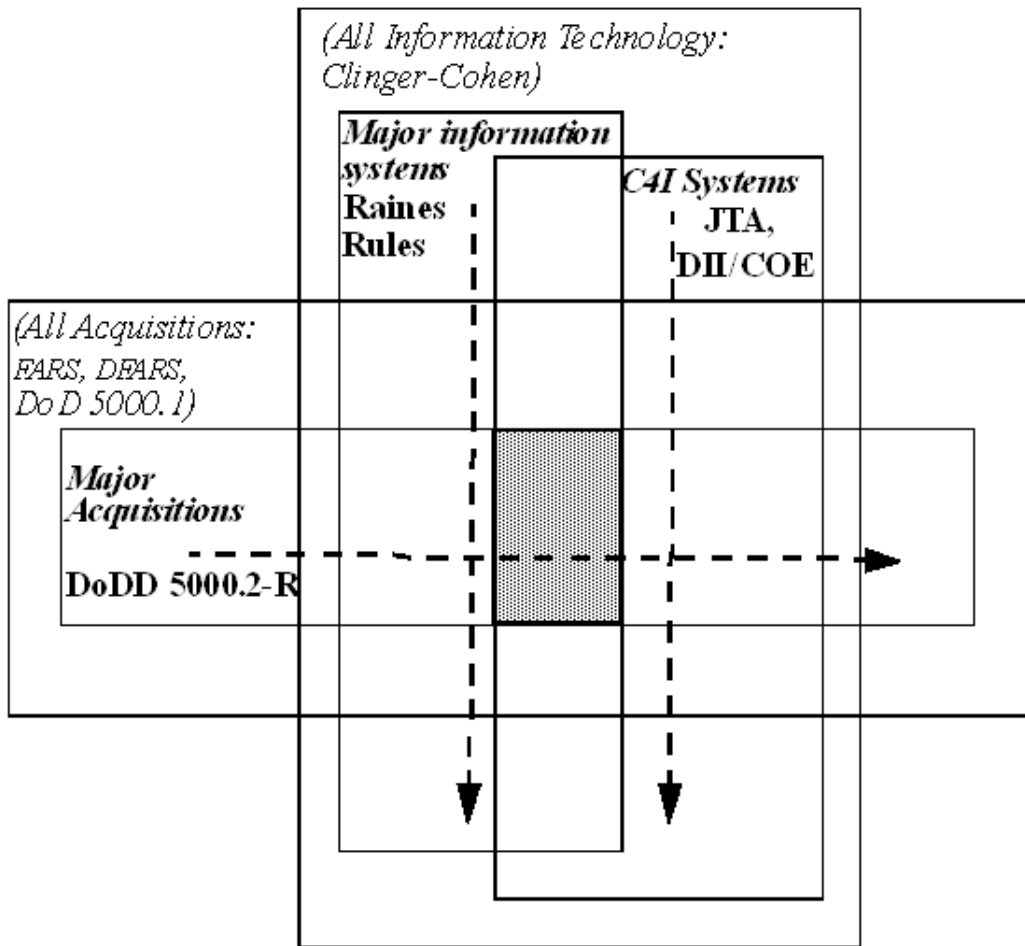

Figure 2

2.2   Acquisition categories

The above distinctions indicate that different programs (at least in terms of their use of COTS products) come under the authority of different sets of these major policy directives. One of the key deciding factors for which authority is in force is whether the program involves a "major" acquisition or a "major" information systems. We therefore must understand those distinctions.

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[2]   The precise meaning of these subsets will be described in the following section.

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categories (ACATs) is between acquisitions of automated information systems (AIS) and acquisitions of everything else. Each of these two major divisions is then further subdivided.

The first general category of acquisitions, acquisition of AIS, has two subcategories. These are defined according to program costs as follows:

ACAT IA:	Programs costing more in a single year than	$ 30M	**OR**
	Programs whose total program cost is greater than	$120M	**OR**
	Programs whose total *lifecycle* cost is greater than	$360M	

Anything not described by the above falls into the remaining category, i.e.,

ACAT III:	Programs costing *no* more in a single year than	$ 30M	**AND**
	Programs whose total program cost is *no* greater than	$120M	**AND**
	Programs whose total *lifecycle* cost is *no* greater than	$360M	

The second of these acquisition categories (i.e., everything *other* than AIS) is partitioned according either to the RDT&E (research, development, test, and evaluation) costs or the total procurement costs[4]. There are three subcategories:

ACAT I:	Programs whose RDT&E portion costs more than	$355M	**OR**
	whose total procurement costs are more than	$2,135B	
ACAT II:	Programs whose RDT&E portion costs more than	$135M	**OR**
	whose total procurement costs are more than	$640M	

Anything not described by the above falls into a third category, i.e.,

ACAT III:	Programs whose RDT&E portion costs *no* more than	$135M	**AND**
	whose total procurement costs are *no* more than	$640M	

In general, acquisitions in the ACAT I, ACAT 1A, and ACAT II categories are considered to be "major" and are explicitly described in 5000.2R by the above distinctions. The policies of 5000.2R apply to these, and are also recommended as guidelines for other acquisitions, but are not binding on them.

A separate definition of a "major information system," applicable not only to DoD but to all Government programs, is made in Raines Rules. This definition is not purely governed by program cost (though cost may be a factor) but rather by the significance of the system that is procured. A major information system is one that requires "special management attention" either because of its mission criticality, its cost, or its role in the procuring agency. (The precise text from Raines Rules is included in Section 3.2 below.)

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[4]   Program costs are counted in FY96 constant dollars.

2.3   Key points about the documents in general

We can recapitulate the points made in this section as follows:

- Several major policy documents and directives have stressed the need to incorporate commercial products in Government systems
- One or more of these documents may be applicable to a given Government program
- The applicability of any of these documents depends on
  - whether the program falls under specific DoD regulations or the overall Government regulations
  - whether the program falls under the categories of acquisition, information technology, or both
  - whether (for acquisitions) the program involves an automated information system or not
  - whether the program (in terms of its costs) is covered in any of the precise DoD acquisition categories
  - whether the program involves a major information system, a C4I system, or both.

3   Capsule summaries of the individual documents

We now provide capsule summaries of each of the major documents that are presently in effect. In Section 4 we will summarize the relationships and common themes found in all of them. We reiterate that these summaries are presented only in terms of their relevance for COTS-based systems.

3.1   Clinger - Cohen Act

This act was passed in February 1996, and took effect in August 1996. It applies in particular to information technology (IT), which is defined as follows:

> equipment or systems of equipment used in automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information by the executive agency

For the Clinger-Cohen Act, the notion of "use" can either be directly by DoD organizations *or* by a contractor whose contract either requires use of such equipment or requires its use in performance of a service or in furnishing a product. The Act does *not* include equipment acquired by a contractor incidental to a federal contract.

The major thrust of the Act is that organizations should carefully plan major investments that involve IT; this should be done according to the following principles:

- organizations will be accountable for their performance (e.g., in IT investments)
- processes should be revised and improved. Once improved, then investment in IT systems should be aimed at automating those (improved) processes
- IT systems that are acquired should make use of standards
- for IT systems, organizations should increase acquisition and incorporation of commercial technology
- for IT systems, organizations should make use of modular contracting vehicles

The Clinger-Cohen Act also calls for DoD organizations to establish Chief Information Officers (CIOs), create Information Technology Architectures (ITAs), make use of the Federal Acquisition Computer Network (FACNET), make use of pilot programs, and use simplified processes for the acquisition of information technology. Also, there are some exemptions from Clinger-Cohen for national security systems.

3.2   Office of Management and Budget Memo ("Raines Rules")

This memo was issued to provide guidance on implementing the Clinger-Cohen Act. It was issued in October, 1996 by the Office of Management and Budget under the direction of Franklin Raines, then OMB Director, hence it is commonly known as "Raines Rules." The memo applies to major information system investments, where a major information system is defined as:

> a system that requires special management attention because of its importance to an agency mission, or its high development, operating, or maintenance costs, or its significant role in the administration of agency programs, finances, property, or other resources

There are eight key rules, all applying to major information system investments.[5] Such investments should:

- support functions that Federal government must perform
- be made because there are no alternatives
- be preceded by Business Process Reengineering
- demonstrate a higher return on investment than if using alternatives
- be consistent with existing Government information architectures
- make use of risk reduction strategies
- be implemented in phased, successive chunks
- employ an acquisition strategy (e.g., sharing risk, promoting competition, tying payments to accomplishments, maximizing commercial technology).

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[5]These eight rules will be implemented by DoD Directive 8000.1, which is currently still in draft status.

3.3 Federal Acquisition Regulations, Part 12 (FAR)

These Regulations apply to all federal acquisitions. The pertinent part of the FAR with regard to COTS is Part 12, Acquisition of CIs. The essential policy:

- organizations should perform market research
- acquisitions should purchase commercial or non-developmental items ("C/NDI") when they are available and they meet the needs of the organization
- prime contractors and subcontractors at all tiers are required to incorporate C/NDI to the maximum extent practicable

There are also several "special rules" that relate to contracting and that have relevance for the use of COTS products. Organizations should:

- use existing product literature for evaluation
- use past performance as a guide
- execute acquisitions using Firm Fixed Price or Fixed Price contracts with economic price adjustment
- rely on the contractor's quality assurance (QA) systems
- acquire only technical data and data rights customarily provided

In addition, the FAR states that both offeror and acquirer can each propose terms and conditions of contracts.

3.4 DoD Directive 5000.1

This Directive applies to all DoD acquisition programs. It thus includes not only acquisitions for information technology, but all other acquisitions as well.

The essential policy is:

- translate operational needs into stable, affordable programs (e.g., through integrated product & process development (IPPD), long-range investment plans, risk management, use of a "cost as an independent variable" (CAIV) approach, performance specifications)
- acquire quality products (e.g., based on competition, test & evaluation, modeling & simulation, past performance, experience in domain, mature software process)
- organize for efficiency & effectiveness (e.g., streamlined organization, trained acquisition corps, teams, tailoring, automated acquisition information)

3.5   DoD Regulation 5000.2

This regulation, DoD 5000.2-R, is authorized by DoDD 5000.1. The regulation applies primarily to major acquisition programs, but also to some acquisitions in the ACAT III category (see Section 2.2 above). In the section on "Cost Performance and application of the earned value management system criteria," the regulation states that it encompasses "significant contracts and subcontracts," which are defined as

> RDT&E contracts and subcontracts of $70M or more, or
> procurement contracts and subcontracts of $300M or more

The regulation strongly urges that programs make use of integrated process teams (IPTs). It also makes recommendations about:

- program definition, principally regarding requirements evolution (e.g., keeping options open especially for CI) and system supportability
- program structure, including using an acquisition strategy of open systems, commercial sources, risk management, CAIV, a modular contract approach, management approach, source of support, warranties. It also makes recommendations about test and evaluation, as well as about making lifecycle resource estimates.
- program design, by using integrated product and process development (IPPD), and placing a systems engineering emphasis on producibility, quality, acquisition logistics, and open system design. The regulation also makes software engineering recommendations, among them to exploit COTS and reuse, and to use incremental development.

3.6   Joint Technical Architecture, version 1.0[6]

The Joint Technical Architecture (JTA) was published 22 August 1996. As stated in the DoD Joint Technical Architecture Implementation Memo,

> the JTA specifies a set of performance-based, primarily commercial, information processing, transfer, content, format and security standards. These standards specify the logical interfaces in command, control and intelligence systems and the communications and computers (C4I) that directly support them

The JTA applies to all C4I systems (and system upgrades, including ACTDs) and all interfaces to C4I systems found in other key assets. The JTA grew out of the Army Technical Architecture work; it replaces the guidance in the TAFIM (Technical Architecture Framework for Information Management) for the kinds of systems specified. Among the mandates in the JTA is the use of DII COE (described below in Section 3.7).

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[6] A new version of the JTA has been drafted, but is not yet approved.

The JTA emphasis is on the achievement of interoperability. The guidance is mandatory for systems with a need for the service; that is, not all systems will utilize all standards listed in the JTA, but if a service covered by a JTA standard is needed, then the standard must be used. The standards fall into the areas of:

- information processing (e.g., data interchange, operating systems, system management, distributed computing).
- information transfer (e.g., directory services, file transfer, network time, world wide web services, transport services, facsimile standards, radio communications)
- information modeling and information (e.g., tactical information)
- human-computer interfaces (e.g., style guides)
- information system security (e.g., security algorithms, internetworking security standards)

Additionally, the JTA mandates the use of the Defense Information Infrastructure (DII) Common Operating Environment (COE) for all C4I systems, with a requirement that they must be DII COE level 5 compliant with a goal of achieving level 8.

3.7   Defense Information Infrastructure (DII) Common Operating Environment (COE)

The information on the DII COE is available through a collection of documents. While there are several documents that describe various aspects of the kernel and infrastructure services to provide developers with the baseline configurations for DII COE, the bulk of the guidance is in the Integration and Run Time Specification (Revision 3.0, 1 July 1997). The DII COE consists of a number of things:

- an architecture that is consistent with the TAFIM Volumes 2 and 3
- an approach for building interoperable systems
- a collection of reusable software components
- a software infrastructure for supporting mission area applications
- a set of guidelines and standards for properly building new software using these tools

The emphasis in the DII COE is to achieve certain economies and increased system interoperability through provision of a set of extensible, low-level building blocks made readily available to system designers.

Baseline configurations are provided for Windows NT 4.0, Solaris 2.5.1, and HP-UX 10.20. In addition, the I&RTS defines the idea of DII COE compliance in eight levels and provides guidance on what is required for a component (called a segment) or a collection of segments (e.g., a COE-based system or the COE itself) to be considered COE-compliant.

4 The documents considered jointly

The common thread we are concerned with among all of these major policy documents is the preference for use of COTS products in DoD systems. These documents are nearly unanimous in either mandating or encouraging at least one of the following:

- commercial items
- commercial (non-government) standards
- commercial technology
- commercial best practices

There are only small differences in how each document stresses this preference. For instance:

> Clinger-Cohen: "increase acquisition and incorporation of commercial technology"

> FAR: "acquire commercial and nondevelopmental items (C/NDI) when available to meet the needs [of the program]" (The FAR also requires primes and subcontractors at all tiers to incorporate C/NDI to the maximum extent practical.)

> DoDD 5000.1: "If use or modification of existing ... equipment will not meet the need, give top priority to ... commercially available equipment"

> DoD 5000.2-R: "Consider C/NDI [to be] the primary source of supply"

> Finally, both the JTA and DII/COE are essentially based on commercial standards and products.

However, in addition to the primary question of using COTS at all, these documents also provide guidance on a number of related topics that are impacted by a COTS approach. These are typically processes and procedures that will change in critical ways when COTS products are the focus of acquisitions and systems. However, guidance is also given on topics such as development and engineering approaches and relationships with vendors. The following is a distillation of some of these topics.

Negotiating Requirements. The major guidance in this area comes from DoD 5000.2-R, with some additional guidance from Raines Rules. This guidance covers the issue of processes to be used when negotiating and specifying requirements. In DoD 50002-R, the guidance is:

- avoid early commitments when refining requirements, especially those that would inhibit future insertion of COTS equipment or components
- modify performance requirements to "facilitate use of ... commercial items, standards, processes, technology, and sources "
- define requirements in terms that enable and encourage offerors to supply C/NDI
- avoid government-unique requirements

In Raines Rules, the guidance about requirements is

- simplify or redesign business processes to "make maximum use of COTS technology"

Economics. There are two major recommendations shared by many of the key documents:

- Do investment planning, with particular attention to return on investment *(Clinger-Cohen, Raines Rules, DoDD 5000.1)*
- *Use cost-effective, affordable approaches, particularly the "cost as an independent variable (CAIV)" approach (Raines Rules, DoDD 5000.1, DoD 5000.2-R).*

Engineering. Most of the documents discuss some aspect of the engineering process with reference to the use of commercial products. Among the major items stressed are:

- use modeling, simulation, and prototyping *(DoDD 5000.1)*
- *seek consistency with DoD architectures (Raines Rules, JTA, DII COE)*
- *take an open systems approach, emphasizing the use of standards (DoD 5000.2-R, JTA)*

Incremental development. Raines Rules recommends implementation in "phased chunks"; both Clinger-Cohen and DoDD 5000.2-R recommend using "modular contracting."

Staff. DoDD 5000.1 recommends training of an "acquisition corps" to perform COTS-related activities.

Program Organization. DoDD 5000.1 and DoD 5000.2-R both recommend using an IPPD approach with integrated product teams (IPTs)

Marketplace. Most of the documents recognize the key importance of marketplace awareness in any COTS-based approach. One key recommendation is to conduct market research, analyzing product and technology areas critical to the program *(FAR, DoD 5000.2-R).* Also, Raines Rules, DoDD 5000.1 and DoDD 5000.2 all stress the need to encourage competition and early industry involvement.

Accountability. Clinger-Cohen recommends enforcing accountability, using performance-based and results-based management. Raines Rules recommend tying payments to accomplishments.

Contractor relations. Some recommendations concern contractor accountability:

select contractors based on successful past performance *(FAR, DoDD 5000.1)*

make maximum use of contractor support *(DoD 5000.2-R)*

Vendor relations. The FAR recommends relying on contractor quality assurance systems, unless in-process inspection is the customary market practice. It also stresses the need to acquire only the technical data and data rights customarily provided, and recommends using firm-fixed price or fixed price with economic price adjustment for acquisition of CI.

5 Conclusion

The purpose of this Monograph was to collect in summary form the essential thrust of key Government documents and directives that concern use of COTS products. We have indicated some differences that exist, in terms of both applicability and scope of the different documents. While these differences are not insignificant, and deserve to be well understood by anyone seriously involved in Government acquisition, we can also conclude a broad consistency that runs throughout these documents. They present a fairly unanimous endorsement of commercial products and technology; the guidance that is contained in each singly and in all jointly is unmistakable, and should be the foundation of a Program Manager's acquisition activity. The task for that manager therefore becomes one of determining the precise ways in which his activities -- managerial, technical, or programmatic—are affected by this collective guidance, and choosing a strategy for incorporating any necessary changes as quickly and effectively as possible.

6 References

OMB Memorandum of October 25, 1996, Subject: Funding Information Systems Investments {Raines Rules}

Department of Defense Joint Technical Architecture, Version 1.0. August, 1996.

DoD Directive 5000.1, "Defense Acquisition," March 15, 1996.

Defense Information Infrastructure (DII) Common Operating Environment (COE) Version 3.1 Baseline Specifications. April, 1997, Joint Interoperablity and Engineering Organization, Defense Information Systems Agency.

DoD Regulation 6000.2 "Mandatory Procedures for Major Defense Acquisition Programs (MDAPS) and Major Automated Information System (MAIS) Acquisition Programs." March 1996.

United States, General Services Administration, Title 48, Federal Acquisition Regulations System. Chapter 1, Federal Acquisition Regulation 1997 9999.

Section 808, Omnibus Consolidated Appropriations Act (Pub. L 104-208): Division D (Federal Acquisition Reform Act of 1996, Division E (Information Technology Management Reform Act of 1996) (Clinger-Cohen Act of 1996).

Feedback

Comments or suggestions about these monographs are welcome. We want this series to be responsive to the real needs of government personnel. To that end, comments concerning inclusion of other topics, the focus of the papers, or any other issues, will be of great value in continuing this series of monographs. Comments should be sent to:

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